seriatis, oblongo-ovoideis, 2 cm longis, 1.6 cm diamtero, basi rotundatis, apice acutis, breviter obtuseque apiculatis, perianthium fructiferum turbinatum, striatum.

No. 3723 Arumizu, Korror Island, Palau, S. NISIDA Sept. 1933. On a coral rock. The species differs from the two precediug ones by its much smaller leafsegments and fruits.

本種ハ西田誠一氏ガ 1933 年、ころおる島、あるみづ附近デ採集シタモノデソノ後ナホ完全ナル標本ヲ入手シナイガ花及ビ實ノ構造ヨリ *Ponapea* ト鑑定シ玆ニ新種トシテ發表スルコトニシタ。 （未完）

Some Diatoms from the Clod of Shichimenzan, Koshu, Japan.

By

K. TSUMURA

津村孝平： 甲州七面山ノ「オ池ノ土」ヨリ得タル硅藻ノ一部

At the temples and the roadside tea-houses in Mt. Minobu or Shichimen, Kôshû (Yamanashi Prefecture), the light yellow clods, 3 cm in diameter, are sold and called "Oike-no-tsuchi", which are the visitor's souvenirs and are served as stypties by some devotees of Nichiren sect.

These are dug from the pond of "Shichimenzan-no-oike" at the behind of the main building of the Kuonji Temple and dried separately in the mould like Japanese Sake-cups.

A long time ago D. Sc. HIROTARÔ HATTORI observed in those "Oike-no-tsuchi" some frustules of Diatoms by the microscopic examinations and reported to be a kind of Diatomaceous earth. He wrote in addition he would show their Latin name another day, but they were never published.

Last year (June, 1935), when I went on an excursion to Mt. Shichimen, I obtained some "Oike-no-tsuchi" and gathered a lump of mud from that pond.

The following are some Diatoms I found in the "Oike-no-tsuchi" and then I wish to describe in future whenever my observations will advance.

Fragillaria (LYNGB.) AGARDH.

Fragillaria mutabilis (W. SMITH) GRUNOW. (Fig. 1.)

Odontidium mutabile W. SMITH, Synopsis II (1856) p. 17, Pl. 34, f. 290.

Valve linear, elliptical, acuminate or cuneate at ends Striæ short, marginal, about 8 in 10 μ. Length of valve 14 μ. Frustules in long filaments.

Meridion AGARDH.

Meridion circulare (GREV.)AGARDH. var. **constricta**(RAOFS) VAN HEURCK. (Fig. 3)

HUSTEDT, Bacillar. (1930) p. 131, f. 119.

Valves clavate, constricted near broader end. Costæ about 10. Length of valve 29 μ. Frustules in fan-shaped colonies.

Diatoma DE CANDLE.

Diatoma hiemale (LYNGB.) HEIBERG. var. **mesodon** (EHR.) GRUNOW. (Fig. 2.)

HUSTEDT, Bacillar. (1930) p. 129, fig. 116.

Frustules rectangular. Valve ovate lanceolate. Costæ 2 to 4. Length of valve 18 μ. Frustules in long filaments.

Eunotia EHRENBERG.

Eunotia pectinalis (KUTZ.) RABENHORST. var. **minor** RABENHORST. (Fig. 8).

HUATEDT, Bacillar. (1930) p. 182, f. 238.

Length of valve 20 to 30 μ. Striæ 12 to 15 in 10 μ.

Eunotia pectinalis (KUTZ.)RAB. var. **minor** RAB. fo. **impressa** EHRENBERG. (Fig. 5)

HUSTEDT, Bacillar. (1930) p. 182, f. 239.

Volve more or less concaved to the middle of dorsal margin. Length of valve 15 μ.

Eunotia prærupta EHRENBERG. (Fig. 4.)

HUSTEDT, Bacillar. (1930) p. 174, fig. 211.

Valve convexed at dorsal margin, slightly concaved at ventral side. Striæ parallel, 6 to 10 in 10 μ.

Eunotia prærupta Ehr. var. **bidens** Grunow. (Fig. 9.)

Hustedt, Bacillar. (1930) p. 174 fig. 213.

Valve as almost in type, but with two dorsal undulations. Length of valve 46 μ.

Eunotfa prærupta Ehr. var. **inflata** Grunow. (Fig. 6.)

Hustedt, Bacillar. (1930) p. 174, fig. 212.

Valve very short a wen-shaped at dorsal margin very slightly concaved at ventral. Length of valve about 20 μ.

Eunotia sp. (Fig. 7.)

Valve 凸-shaped at dorsal, slightly concaved at ventral margin. Length of valve 25 μ.

Eunotia trinacria Krasske. (Fig. 10.)

Hustedt, Bacillar. (1930) p. 176, fig. 221.

Valve semi-circular, rounded at ends. Length of valve 26 μ.

Achnanthes Bory.

Achnanthes inflata (Kutz) Grunow. (Fig. 11.)

Hustedt, Bacillar. (1935) p. 209, fig. 307.

Valve gibbous in the middle, with broad, rounded capitate ends. Lower valve with raphe, sometimes asymmetrical transvers fascia. Upper valve with very excentric pseud-raphe. Striæ slightly radiate, 9 to 10 in 10 μ. This species are known only fouud from Yakushima by Mr. Iwahashi, in Japan.

Cocconeis Ehrenberg.

Cocconeis placentula Ehr. var. **lineata** (Ehr.) Cleve. (Fig. 12.)

Hustedt, Bacillar. (1930) p. 190, fig. 162.

Length of valve 20 μ. Very common in freshwater.

Navicula Bory.

Navicula pupla Kutz. var. **rectangularis** Gregory. (Fig. 16.)

Hustedt, Bacillar. (1930) p. 281, fig. 467 b.

Valve linear, with broad, rounded ends. Striæ, radiate, 15 (middle) to 22

(end) in 10 μ. Length of valve 30 μ.

Navicula radiosa KUTZING. (Fig. 17.)

HUSTEDT, Bacillar. (1930) p. 300, fig. 513.

Valve narrow, lanceolate, with subacute ends. Axial area very narrow. Central area very small. Striæ strongly radiate in the middle, and convergent at ends, about 8 to 12 in 10 μ. Length of valve about 64 μ.

Pinnularia EHRENBERG.

Pinnularia appendeculata (AGARDH.) CLEVE ? (Fig. 18.)

Valve linear, with slightly subcapitate ends. Central area transverse fascia. Striæ divergent in the middle, convergent at ends Length of valve 53 μ.

As our specimen is narrow in axial area, Latin name is uncertain.

Pinnularia borealis EHRENBERG. (Fig. 13.)

HUSTEDT, Bacillar. (1930) p. 326, fig. 597.

Valve linear, with rounded ends. Raphe with approximate central pores and large hook-shaped terminal fissures. Striæ parallel or sometimes slightly radiate in the middle, convergent at ends, 4 to 6 in 10 μ. Length of valve 23 μ.

Pinnularia hemiptera (KUTZ.) CLEVE. (Fig. 19.)

HUSTEDT, Bacillar. (1930) p. 329, fig. 608.

Valve linear-elliptical, with rounded ends. Axial area broad. Striæ almost parallel, 8 or 9 in 10 μ. Length of valve 53 μ, breads 16 μ. This species is likely as a variation of P. viridis.

Pinnularia interrupta SMITH. var. **sinica** SKVORTZOV ? (Fig. 20.)

SKVORTZOV, Diat. from Poyang Lake (1935) p. 471, Pl. 2, fig. 20.

Valve lanceolate, with concaved lateral margin, constricted rostrate ends. Striæ parallel or slightly radiate, 10 in 10 μ.

Pinnularia nobilis EHRENBERG. (Fig. 22.)

HUSTEDT, Bacillar. (1930) p. 337, fig. 619.

Valve linear, slightly gibbous in the middle and at ends. Raphe complex. Striæ radiate in the middle, convergent at ends, crossed by narrow band, 7 to 8 in 10 μ. Length of valve 187 μ.

Pinnularia viridis (NITZSCH) EHRENBERG. (Fig. 23, 25.)

HUSTFDT, Bacillar. (1930) p. 334, fig. 67 a.

Length of valve 15 μ. Striæ 6 to 7 in 10 μ. Very common in freshwater.

Pinnularia viridis (NITZSCH) EHR. var. **fallax** CLEVE. (Fig. 27.)

SMITH, Synopsis I (1853) Pl. 18, fig. 163 b.

Valve linear, with rounded ends. Axial area very narrow. Striæ nearly parallel, sometimes uni- or bilaterally interrupted.

Pinnularia sp. (Fig. 24.)

Valve is alike to P. hemiptera. Striæ parallel. Differs in slightly concaved lateral margin. Length of valve 57 μ.

Pinnuralia sp. (Fig 14.)

Valve like in P. borealis, but longer, and undulate lateral margin. Length of valve 27 μ.

Caloneis CLEVE.

Caloneis silicula (EHRENBERG) CLEVE. (Fig. 29.)

HUSTEDT, Bacillar. (1930) p. 236, fig. 362.

Valve linear, with gibbous in the middle, broad subtruncate at ends. Longitudinal lines marginal. Axial area narrow, central area small rounded. Striæ parallel, 18 in 10 μ. Length of valve 50 μ.

Stauroneis EHRENBERG.

Stauroneis Phœnicentron EHRENBERG. (Fig. 33.)

HUSTEGT, Bacillar. (1930) p. 255, fig. 404.

Valve lanceolate, with truncate ends. Axial area linear, central area transverse fascia to lateral margin (Stauros). Striæ slightly radiate, 16 to 18 in 10 μ. Length of valve 54 μ.

Gomphonema AGARDH.

Gomphonema constrictum EHR. var. **capitata** (EHR.) CLEVE. forma. (Fig. 28.)

SMITH, Synopsis I (1853) Pl. 28, fig. 237 b.

Valve lanceolate, mith rounded apex. Axial area narrow. Central area star-like, for median striæ alternating longer and shorter, with a stigma. Length of valve shorter than in type.

Cymbella AGARDH.

Cymbella heteropleura (EHR.) KUTZ. var. **minor** CLEVE. (Fig. 26.)

CLEVE, Synopsis I (1856) p. 167.

Valve nearly symmetrical, with rostrate and truncate ends. Raphe nearly straight. Axial area linear transversaly dilated in the middle. Striæ radiate, 8 to 10 in 10 μ. Length of valve 60 μ, and breadth 18 μ.

Cymbella lanceolata (EHRENB.) BRUN. (Fig. 36.)

HUSTEDT, Bacillar. (1930) p. 364, fig. 679.

Length of valve 116 μ. Striæ 8 to 10 in 10 μ. Common in freshwater.

Cymbella ventricosa KUTZING. (Fig. 15.)

HUSTEDT, Bacillar. (1930) p. 359, fig. 661.

Valve semi-circular, with straight or slightly gibbous ventral margin. Raphe straight, near the ventral margin. Striæ radiate, 12 to 30 in 10 μ. Frustules in gelatinous tubes.

Epithemia BREBISON.

Epithemia trugida (EHR.) KUTZING. (Fig. 34.)

HUSTEDT, Bacillar. (1930) p. 387, fig. 733.

Valve arcuate, with subcapitate or subrostrate ends. Costæ radiate, 4 in 10. Alternating with two rows of puncta. Central portion of raphe acute angled.

Epithemia trugida (EHR.) KÜTZING. var. **granulata** (EHR.) BRUN. (Fig. 35.)

SMITH, Synopsis (1853) Pl. I, fig. 3.

Valve more slender than in type, with rounded ends. Beside this like as in type.

Nitzschia HASSAL.

Nitzschia fonticola GRUNOW. (Fig. 32.)

HUSTEDT, Bacillar. (1930) p. 415, fig. 800.

Valve lanceolate, with truncate ends. Striæ very closely, 25 to 30 in 10 μ. Length of valve 20 μ.

Nitzschia sp. (Fig. 31.)

Valve slender, with constricted in the middle, apiculate ends. Length of valve 29 μ.

Surirella TRUPIN.

Surirella linearis W. SMITH (Fig. 30.)

HUSTEDT, Bacillar. (1930) p, 434, fig. 837-838.

Valve linear, occasionally constricted in the middle, with cuncate ends, Costæ parallel, 2 to 3 in 10 μ. Length of valve 27 μ.

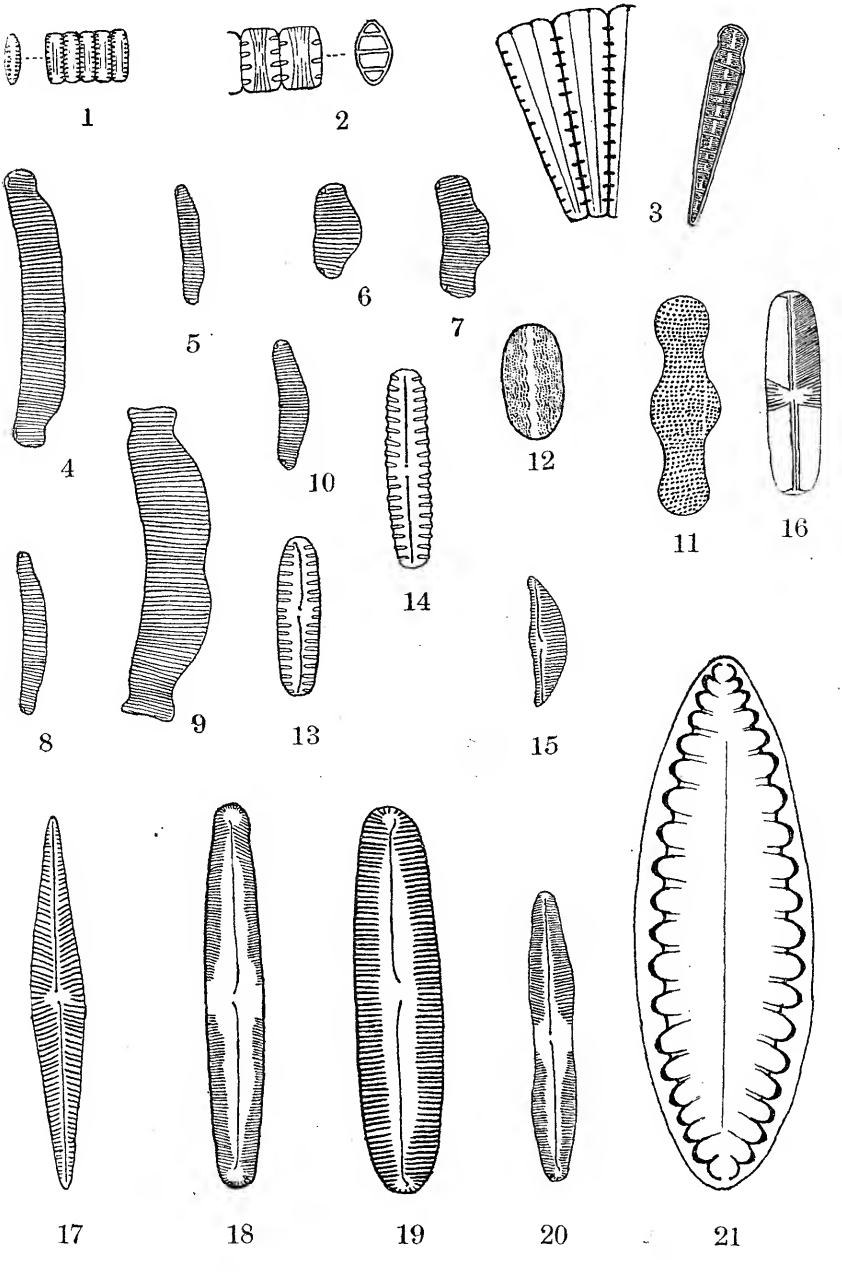
Surirella rabusta EHRENBERG. var. **splendida** (EHR.) VAN HEURCK.

(Fig. 21.)

Valve ovate-lanceolate. Clavate in girdle view. Costæ parallelin the middle, slightly radiate at ends, 15 in 100 μ. Alæ prominent. Central area broad. Length of valve 150 μ.

Explanation of Plates.

1. *Fragillaria mutabilis* (SMITH) GRUNOW. 2. *Diatoma hiemale* (LYNGB.) HEIBERG. var. *mesodon* (EHR.) GRUNOW. 3. *Meridion circulare* (GREV.) AGARDH. var. *constricta* (RALFS) VAN HEURCK. 4. *Eunotia prærupta* EHRENBERG. 5. *Eunotia pectinalis* (KUTZ.) RABENHORST. var. *minor* RABENHOST. forma *impressa* EHRENBERG. 6. *Eunotia prærupta* EHRENBERG. var. *inflata* GRUNOW. 7. *Eunotia sp.* 8. *Eunotia pectinalis* (KUTZ.) RABENHORST. var. RABENHORST. 9. *Eunotia prærupta* EHRENBERG. var. *bidens* GRUNOW. 10. *Eunotia trinacria* KRASSKE. 11. *Achnanthes inflata* (KUTZ.) GRUNOW. 12. *Cocconeis placentula* EHRENBERG. var. *lineata* (EHR.) CLEVE. 13. *Pinnularia borealis* EHRENBERG. 14. *Pinnularia sp.* 15. *Cymbella ventricosa* KUTZING. 16. *Navicula pupla* KUTZING. var. *rectangularis* GREGORY. 17. *Navicula radiosa* KUTZING. 18. *Pinnularia appendeculata* (AGARDH) CLEVE ? 19. *Pinnularia hemiptera* (KUTZ.) CLEVE. 20. *Pinnularia interrupta* SMITH. var. *sinica* SKVORTZOV? 21. *Surirella robusta* EHRENBERG. var. *splendida* (EHRENBERG) VAN HEURCK. 22. *Pinnularia nobilis* EHRENBERG. 23. *Pinnularia viridis* (NITZSCH) EHRENBERG. 24. *Pinnularia sp.* 25. *Pinnularia viridis* (NITZSCH) EHRENBERG. 26. *Cymbella heteropleura* (EHRENBERG) KUTZING. var. *minor* CLEVE. 22. *Pinnularia viridis* (NITZSCH) EHRENBERG. var. *fallax* CLEVE. 28. *Comphonema constrictum* EHRENBERG. var. *capitata* (EHRENBERG) CLEVE. forma. 29. *Caloneis silicula* (EHRENBERG) CLEVE. 30. *Surirella linearis* W. SMITH. 31. *Nitzschia sp.* 32. *Nitzschia fonticola* GRUNOW. 33. *Stauroneis Phœnicentron* EHRENBERG. 34. *Epithemia trugida* (EHRENBERG.) KUTZING. 35. *Epithemia trugida* (EHRENBERG.) KUTZING. var. *granulata* (EHRENBERG) BRUN. 36. *Cymbella lanceolata* (EHRENBERG) BRUN.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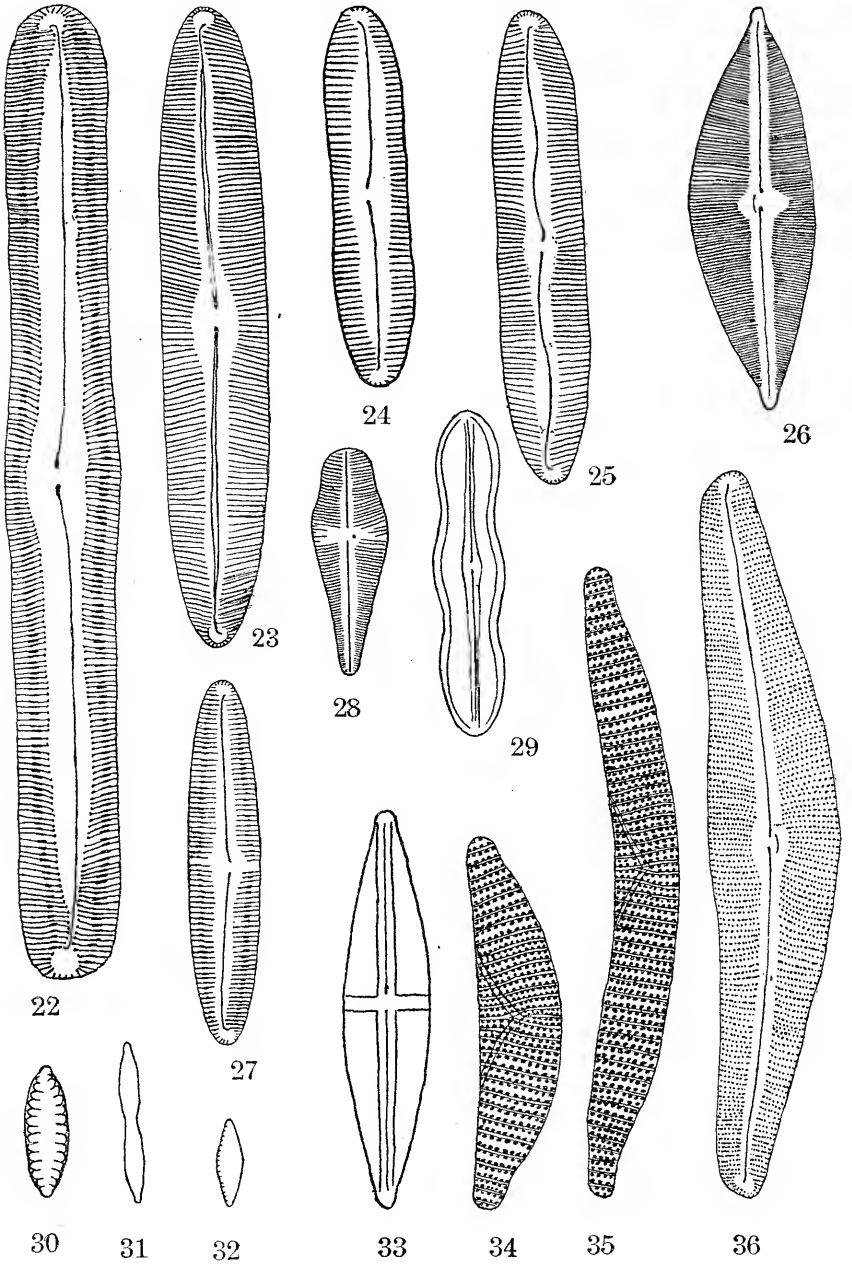
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